JUNKERS Ju 88 in Action

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JUNKERS Ju 88 in Action

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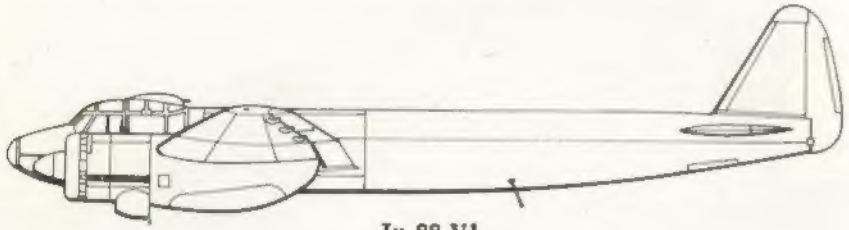
Development of the Junkers Ju 88

During the spring of 1935 the German Air Ministry issued requirements for a **Schnellbomber** (fast bomber), calling for a crew of three with a defensive armament of one 7.9mm MG 15 machine gun in the dorsal position. The bomber was to carry a normal offensive bomb load of 1,100 lbs. and a maximum of 1,765 lbs., it had to be able to reach a maximum speed of 310 mph and maintain this speed for at least 30 minutes, the maximum cruising speed was to be 280 mph and had to be able to reach 22,965 feet within 25 minutes with a normal bomb load. It was further stipulated that the prototype had to be completed within nine months and that production aircraft could be produced with no more than 30,000 man hours.



Ju 88 V1

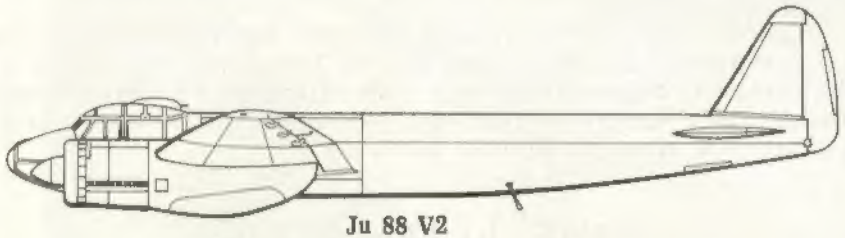
Junkers began work on the project on 15 January 1936 with the prototype flying for the first time on 21 December 1936. This being a low wing cantilever monoplane powered by two **Daimler Benz DB 600Aa** 12-cylinder liquid cooled engines rated 1,000 h.p. for take-off. After a very short time the **Ju 88 V1** was lost in an accident, but the second prototype, the **Ju 88 V2** flew on 10 April 1937. Outwardly the second prototype looked about the same as the Ju 88 V1, except for the engine nacelles holding the DB 600Aa being reshaped and the chin radiator being removed and replaced with a ring shaped annular radiator. The aircraft now looked like it was powered by radials, rather than in-line engines (a feature that was to remain throughout the service life of the Ju 88). The airplane's performance was somewhat improved with the change of radiators and the DB 600 engines were only temporary measures until a more powerful engine could be made available. It was the Junkers engine works that ultimately produced the **Jumo 211** engines that would power the majority of the Ju 88's manufactured. The third prototype, the **Ju 88 V3,** was fitted with a pair of the new Jumo 211's, producing some 1200 h.p. on take-off. The first flight of the V3 in September 1937 clocked speeds of over 330 mph. The Schnellbomber was no longer a design, it was a fact.

Although the original design was conceived on the basis of a lightly armed aircraft whose defense would be enough speed to outrun any enemy in pursuit, combat experience gained in Spain suggested that the defensive armament should be increased regardless of its speed. The result was an order to modify the design to incorporate a fourth crew member, increased defensive armament and dive bombing capability. These changes were embodied on the **Ju 88 V4** flying on 2 February 1938. Optically flat panels were installed in the nose, and a ventral position for a 7.9mm rear firing machine gun on a flexible mount.

In order to gain world recognition and prestige it was decided to reveal the Schnellbomber to the world by using it to try for a record breaking flight. The **Ju 88 V5** was modified by having **Jumo 211B-1** engines (the same engines that production machines called for) being rated at 1,200 h.p., the ventral gondola was removed, the cabin

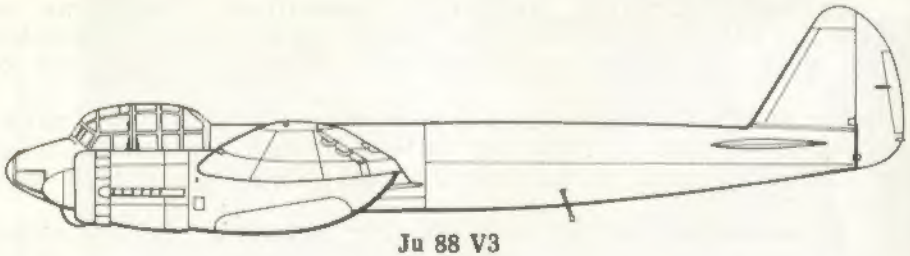
roof lowered and a new pointed nose cone fitted. In March the **Ju 88 V5** established a new 621-mile closed circuit record by carrying a 4,409 lb. payload at an average speed of 321.25 mph.

The Ju 88 design had now progressed to the point where the preproduction prototype for the **A** series bomber, the **Ju 88 V6** had joined the test program, flying for the first time on June 18, 1938. The Ju 88 V6 differed from its predecessors by carrying a four bladed prop, the engine nacelles were reduced in depth because the main undercarriage had been completely redesigned with a new single strut oleo. Armament had been increased to three MG 15's and an internally housed bomb load up to 1,100 lbs. had been provided for.



Ju 88 V2

Both dive brakes and bomb carriers were standardized on the production **Ju 88A-0** which were delivered to the specially formed **Erprobungskommando 88** in late March 1938. It was their task to evaluate the machine under service conditions as well as evolve training techniques. Erprobungskommando 88 provided the nucleus for **I/KG 30** that received the first production **Ju 88A-1's** on 22 September 1939. The first operational sortie of KG 30 on 26 September included several of the preproduction Ju 88A-0 bombers.



Ju 88 V3

With the Ju 88 as his model, General Ernst Udet saw the possibility of the creation of large air fleets of medium bombers capable of either horizontal or dive bombing Germany's enemies into submission. Udet was willing to stake the entire output of Germany's bomber production on the Ju 88 but his major opposition came from General Wever, who favored the production of four engined strategic bombers capable of long range flights with heavy payloads far

Another view of the massed production line of Ju 88 bomber fuselages; these are of the A-4 and A-5 types, as can be seen by the bulging canopies over the cockpits of the aircraft in the background. Factory workers in the foreground of the photograph are in the process of installing the clear plexiglass-paneled nose pieces of the aircraft nearest the camera.

behind the enemy's front lines. General Wever's untimely death in his **Heinkel He 70** opened the door to Udet and his ideas. In a short time he had swung most of Wever's followers over to his way of thinking and was ultimately able to make the Air Ministry commit itself to accepting the Ju 88 as the standard Luftwaffe bomber.

Quantity production of the Ju 88 increased quickly, while only 110 machines had been accepted by the end of 1939, over 2100 had been accepted by the Luftwaffe during 1940, of which some 60 were night fighters* and 330 were reconnaissance models; in 1941 total production had risen to 2,619 of which nearly 2000 were bombers; in 1942 the production total was 3,094. By 1943 the Ju 88 was numerically the most important weapon in the German bomber command's inventory and from 1943, the machine started showing up in the air forces of Germany's allies.

The first unit to employ the Ju 88 operationally was I/KG 30 when four aircraft took off from **Westerland/Sylt** to attack a British naval force including the Ark Royal and the Hood. Bombs from the Ju 88's were confirmed to have hit the Hood and believed to hit the Ark Royal (although no damage was done to either ship). On 9 October another I/KG 30 formation attacked targets in England for the first time and two Ju 88A's were lost to Spitfires of Nos. 602 and 603 Squadron. By 30 April 1940, all three Gruppen of KG 30 were operational and carried 84 Ju 88A's on strength.

During the spring of 1940 **KG 51** began converting from He 111's to Ju 88A's completing this on the 10th of May. At the same time **Lehrgeschwader 1** and **KG 4** began conversion, however these were not completed by the time the Battle of France ended and consequently the first major action in which the Ju 88 participated in large quantities was the "Battle of Britain."

While the speed of the Ju 88 was, by contemporary 1940 standards, impressive, it still suffered roughly at the hands of British fighters, although not nearly as badly as its slower brethren, the **He 111** and **Do 217.**

The Mediterranean saw much participation of the Ju 88 where KG 54, KG 77, LG 1, and KG 30 were used during the attack on Malta. The bulk of the bombing missions carried out in North Africa were borne by LG 1 which operated to exceptionally good effect in support of Rommel's ground forces.

The outset of the Russian campaign included a large number of Ju 88 equipped units: **II** and **III/KG 1, KG 76, KG 77, I** and **II/KG 3, KG 51, I** and **II/KG 54** and **6./KG 30.** On 22 July 1941 some 130 aircraft including Ju 88A's of KG 3 and KG 54 made the first large raid against Moscow. During April and May 1943, 23 ex-Luftwaffe **Ju 88A-4's** were turned over to Finland and used against the Russian onslaught until the acceptance of peace terms in early September 1944. Shortly the Finnish Ju 88's were in use harassing the German forces retreating from Finnish territory.

In early 1943, 52 Ju 88's were delivered to the **Italian Regia Aeronautica** and the **Rumanian Air Force** received enough Ju 88A-4's to equip three Squadrons which were also used against the Germans after the coup d'etat in August 1944. A number of machines were supplied to the Hungarian Air Force.

Besides the Rumanian and Finnish Air Forces, the French used repaired Ju 88's against the Germans. In March 1945 the French began receiving new Ju 88A-4's assembled at the **Ateliers Aeronautiques de Boulogne** which continued for a short time after the German surrender.

*Squadron/Signal has a book entitled *German Nightfighters* in preparation telling the whole tragic story of the German night fighter arm.

THE Ju 88A SERIES

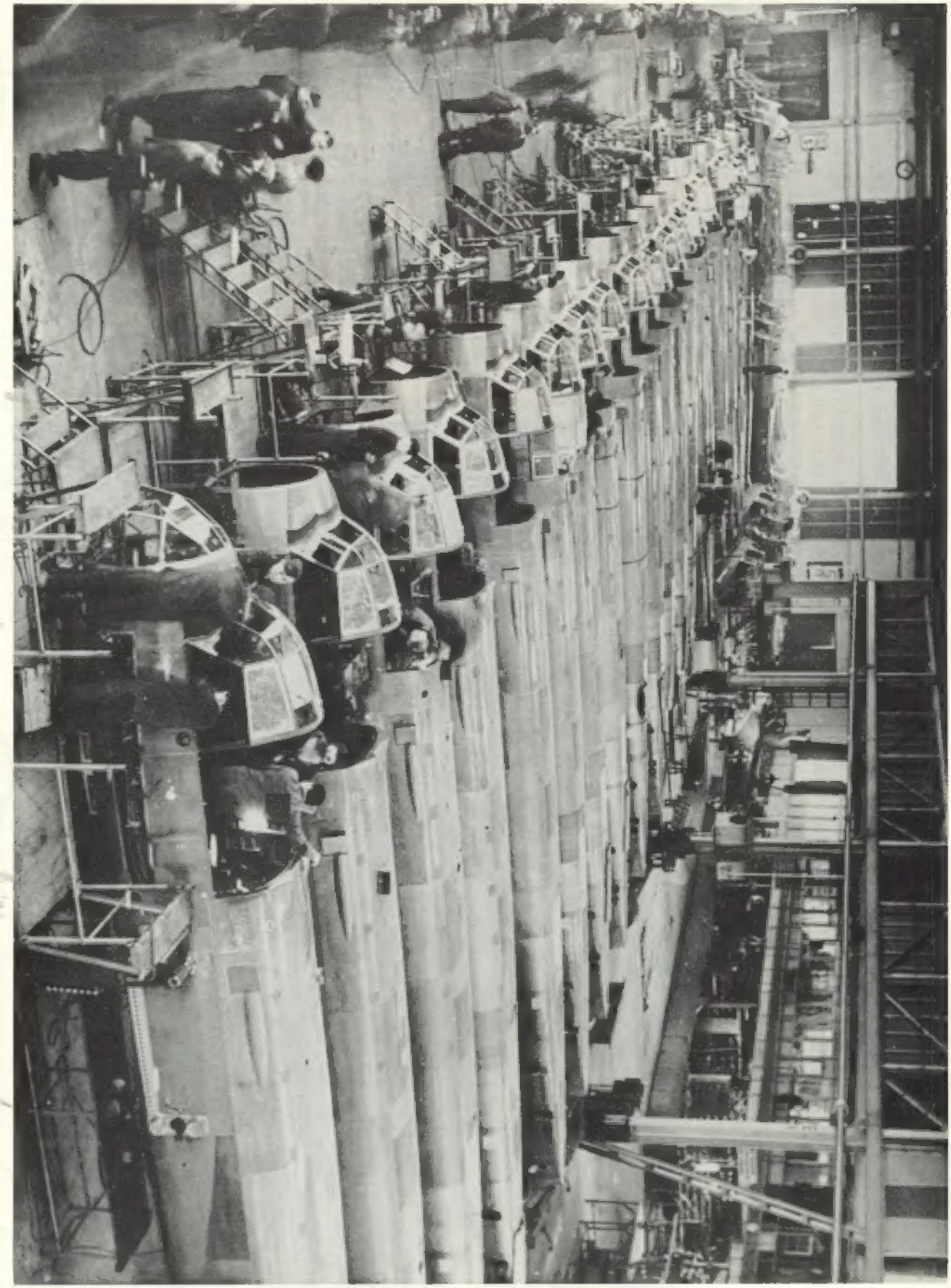
Ju 88A-1 The first production variant of all the Ju 88 aircraft types, it was fitted with a pair of Jumo 211B-1 in-line engines with fuel injection, producing over 1250 horsepower each on take-off. Bomb load was 2500 Kg (5500 lbs) and either internal or external bomb carrying capability was available. Defensive armament was 4 X MG 15 hand held 7.92mm machine guns and flew with a crew of four. Production was superceded by the Ju 88A-4.

Ju 88A-2 Only a few built. Essentially the same as the Ju 88A-1 except for a much strengthened fuselage and wings to permit launching from catapult installations on ships.

Ju 88A-3 Ju 88A-1's were modified for trainer duties by installing dual controls and instruments for the familiarization of Luftwaffe pilots to the new Ju 88A-1. Most Ju 88A-3's were unarmed.

Ju 88A-4 Second major production variant of the A series. Featured a number of major changes over the Ju 88A-1 variant, including an extended wingspan from 58½ feet on the A-1 to 65 feet on the A-4. The new Jumo 211J engines were fitted allowing a take-off horsepower (combined) of over 2800 h.p. Armament increased to 3 X MG 81 7.92mm machine guns in the cockpit and one MG 81Z twin machine gun in the gondola. Bomb load increased to 3000 Kg (6600 lbs.). The A-4 was the most produced individual variant of the A series.

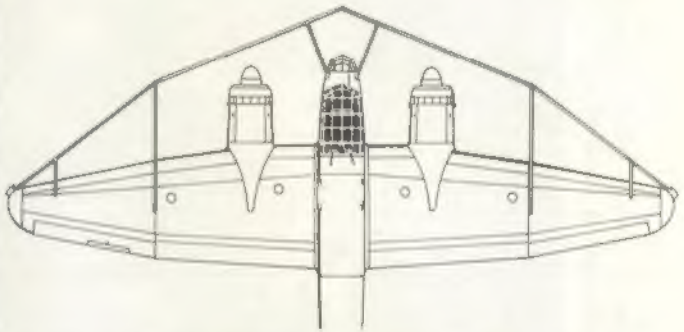
The Junkers factory in Germany during 1940. In the far background Ju 87 divebomber fuselages can be seen, while the rest of the photograph is occupied by Ju 88A fuselages in various stages of completion.



Ju 88A-5 Produced at the same time the A-4 was being manufactured, A-5's were actually released before the first completed A-4 rolled off the assembly lines. This was because of delays in the production of the Jumo 211J engines which went into the A-4 variant. The A-5 was powered by a pair of Jumo 211G or Jumo 211B engines, but they also incorporated the extended wings of the Ju 88A-4 and to all intents were the same as the A-4, except for the type of engines used.

Ju 88A-6 The A-6 variant was specifically fitted to lead Ju 88 formations over heavily defended targets in England during the Battle of Britain in the autumn of 1940. The A-6 was fitted with a barrage balloon cable cutting device which consisted of a pair of rails that extended from either wing tip to the nose on the leading edges of the wing, in front of the props. This setup weighed over 700 lbs. and not only slowed the aircraft down, but seriously affected its handling characteristics, so a counterweight was placed in the tail, but the loss of speed was too great to use the aircraft as it had originally been planned.

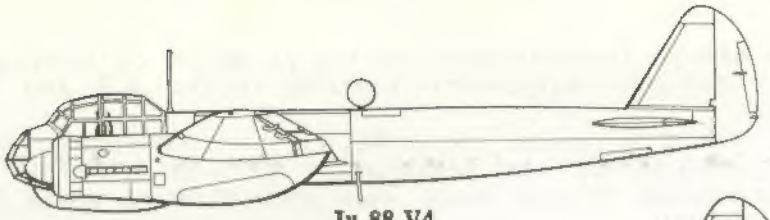
Ju 88A-7 The A-7 variant was a trainer version of the A-5, consisting of modifications to include dual controls and instrumentation.



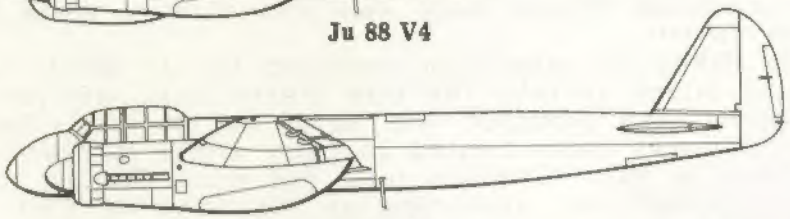
Ju 88A-6 Fitted with Barrage Ballon Cable Cutting Device

(Refer to facing page for profile)

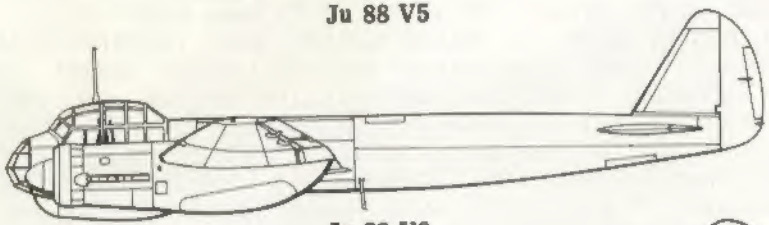
In advanced stages of completion, these Ju 88A's receive final touches to the wing roots, engines, and tail assemblies. Notice the tailor-made quilted covers over the surfaces of the wings placed there to enable the factory workers to do their jobs without harming the skinning on the wings.



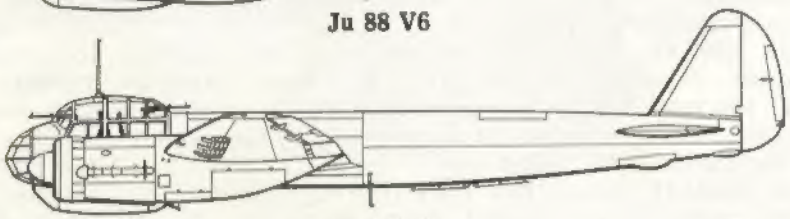
Ju 88 V4



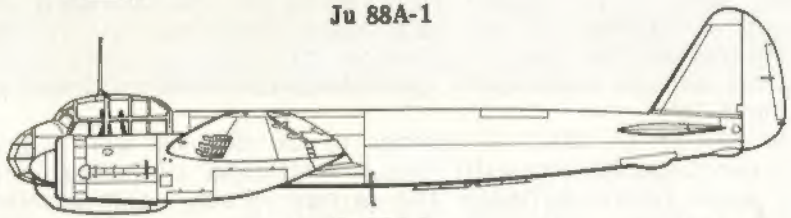
Ju 88 V5



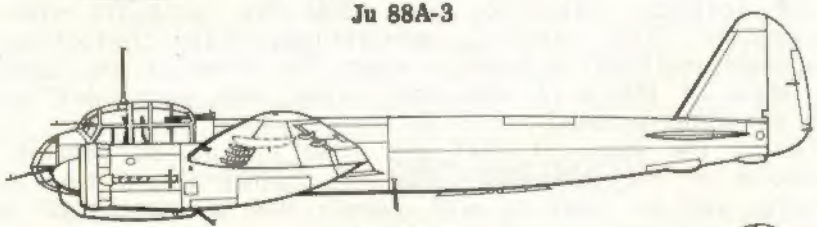
Ju 88 V6



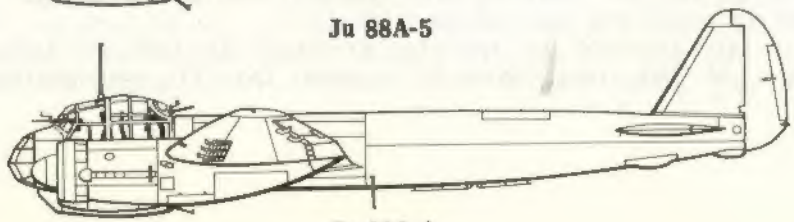
Ju 88A-1



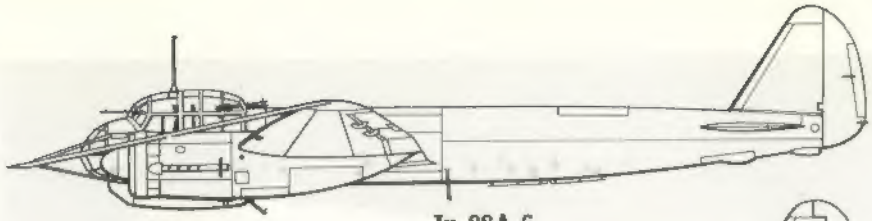
Ju 88A-3



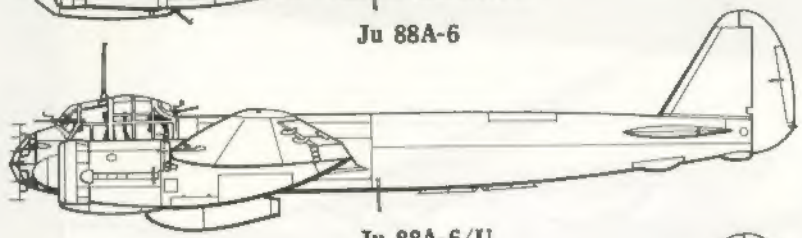
Ju 88A-5



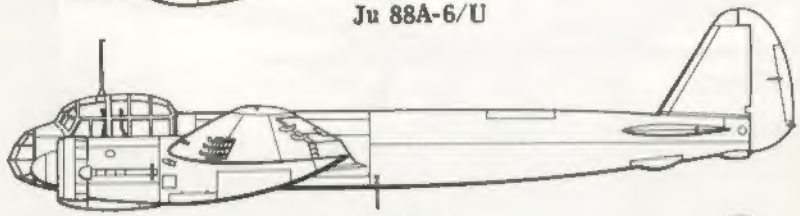
Ju 88A-4



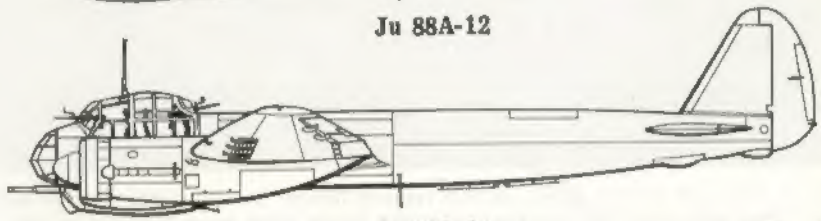
Ju 88A-6



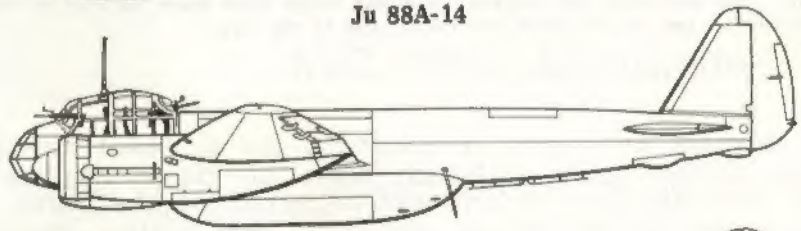
Ju 88A-6/U



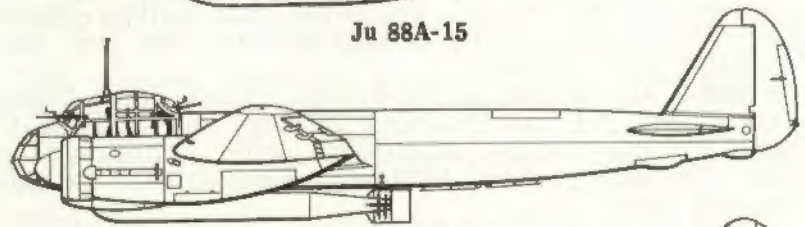
Ju 88A-12



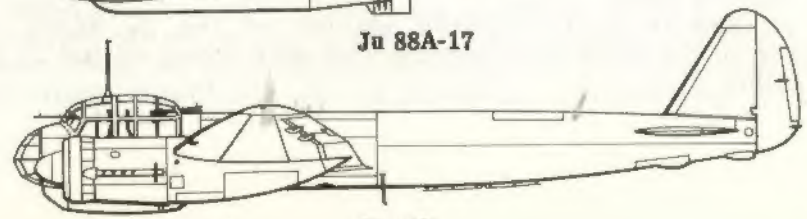
Ju 88A-14



Ju 88A-15



Ju 88A-17



Ju 88D

This Ju 88A sits at the doors of the factory hangar awaiting her first shakedown flight. The lattice-like dive brakes under the wings have been lowered to test them prior to the test flight which will come later in the day.

Ju 88A-8 An attempt at modifying the Ju 88A-4 for balloon cable cutting duties. Although some of the speed that was lost with the A-6 variant was regained by the Jumo 211J engines of the A-8 version, the large cable cutting device still caused the airplane to fly unsatisfactorily; the A-8 was not produced in large numbers.

Ju 88A-9 Also called Ju 88A-1/Trop. Essentially a tropicalized version of the A-1, modifications included the addition of sun screens for the canopy, additional water containers, and a survival kit including rations, lightweight sleeping bags and shotguns for hunting game.

Ju 88A-10 A tropicalized version of the Ju 88A-5, consisting of the same modifications that were found on the Ju 88A-9 variants.

Ju 88A-11 Tropicalization of the Ju 88A-4 containing the same additional equipment installed in the A-9 and A-10 versions.

Ju 88A-12 A number of Ju 88A-4's were modified to trainer configurations by the installation of dual controls and instrumentation. Cockpit walls were also widened, unlike other trainer variants.

Ju 88A-13 An attempt at modifying the Ju 88A-4 into a ground attack aircraft. The dive breaks were removed and increased armor protection was added for the crew's benefit. Special packs were created to carry either anti-personnel bomblets or MG 17 machine guns that could be fired to the front or the rear, dependent on the way the pack was installed on the aircraft. Not many A-13's were built.

Ju 88A-14 Some Ju 88A-4 aircraft were modified with the addition of the Kuto Nase balloon cable cutter device, much smaller than the cable cutters used on the A-6 and A-8 variants. A forward firing MG/FF 20mm cannon was installed in the front of the under-fuselage gondola which necessitated the removal of the horizontal Lotfe bombsight. The cannon was used for anti-shipping and commerce-raiding attacks.

Ju 88A-15 The A-15 variant was an attempt to create a bomber capable of carrying a heavy internal bomb load (6600 lbs.) by the removal of the under-fuselage gondola and the addition of a specially-built wooden bomb bay which was fitted over the regular internal bomb bay.

Ju 88A-16 Since the handling characteristics of the A-15 variant were very different from those of the standard Ju 88 aircraft, a number of Ju 88's were converted to the trainer configuration by the installation of dual controls and the removal of the underbelly gondolas in order to train pilots for the A-15's.

Ju 88A-17 In 1942, a number of Ju 88A-4's were converted to torpedo bombers with the installation of torpedo racks that were fitted beneath the wings. Each rack carried an LTF5b torpedo weighing over 1600 lbs and its steering mechanism. The steering mechanism was controlled by equipment installed in fairings along the sides of the fuselage. The crew of the A-17 was only three, and some A-17's had their gondolas removed.

During the years of 1941 and 1942 the Ju 88 became the backbone of the Luftwaffe's bomber command and the Ju 88 airframe was by then so well proven that a number of other uses and missions were chosen for it.

In an attempt to modify existing aircraft to take the place of the obsolescent Dornier Do 17 reconnaissance

A high flying Ju 88A-4 bomber of Bombing Wing 3, the so-called "Lightning Wing" (Blitzgeschwader) shows off its unit marking; a bolt of lightning over a shield. The color of the lightning bolt and the shield determined the Gruppe within the Geschwader.

KG3 (Blitz Geschwader)

aircraft, Junkers modified some Ju 88 bombers to the reconnaissance role by mounting additional fuel cells in the bomb bay area and installed special aerial cameras in the rear of the fuselage. Additional fuel capacity was made available by the addition of a pair of 900 liter drop tanks under the wings. These aircraft were designated Ju 88D-0 and became the pre-production prototypes for the D series of Ju 88's.

THE Ju 88D SERIES

Ju 88D-1 The first strategic long range reconnaissance variant of the Ju 88 airframe. The D-1 was a modification of the Ju 88A-4 airframe, using the same engines, but having the installation of fuel cells in the bomb bay and aerial cameras in the rear fuselage. Modifications began in late 1940 and continued throughout 1941.

Ju 88D-2 In all respects similar to the Ju 88D-1, except that the original airframe was the Ju 88A-5, carrying the Jumo 211G engines instead of the A-4's 211J's. Dive brakes on all Ju 88D reconnaissance variants were removed.

Ju 88D-3 The D-3 was a tropicalized variant of the Ju 88D-1 and featured the same modifications made on the Ju 88A-9, A-10, and A-11 variants.

Ju 88D-4 Tropicalized version of the Ju 88D-2.

Although other Ju 88 variants were produced during the war years, they are not within the scope of this book because of the many directions Ju 88 airframe development took.

Some of the Ju 88's brothers are covered in the Squadron/Signal publication Aircraft No. Three, **Luftwaffe Bombers in Action.**

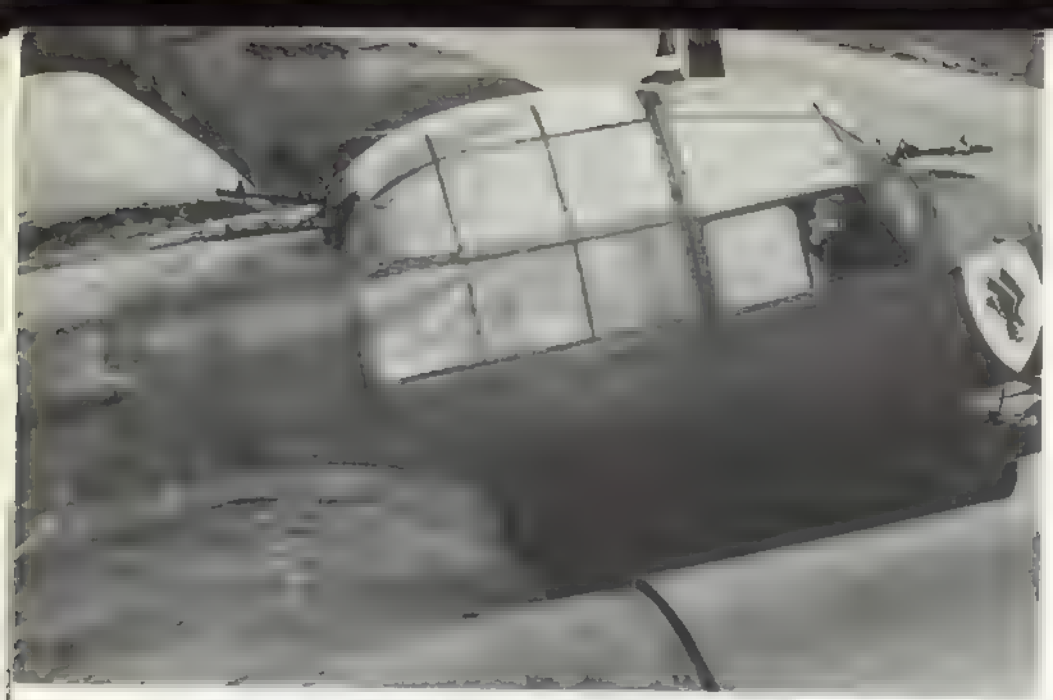
From a rather meager beginning in 1939, the Ju 88 bomber was to grow to one of the most produced of all the aircraft used by the Luftwaffe during the war. Between the years 1939 and 1945, the Ju 88 airframe received more than 3000 changes to its original configuration. By the end of the war, more than 15,000 Ju 88's of all types had been built and even more were found in various stages of completion in hidden factories around Germany and other occupied countries. Germany's refusal to back the concept of strategic bombers before the war caused the Luftwaffe to be burdened with the Ju 88 in performing functions that she was clearly not designed to perform. Modifications were made to the airframe that were never intended to be made. As with the other great German aircraft, the Bf 109 and the He 111, the Luftwaffe had committed itself to waging war with these types once hostilities had begun, and by the time these great aircraft began to reach obsolescence, the German nation was so deeply involved in the war that it was too late to change to other types.

JUNKERS FACTORY EMBLEM

Ju 88D-2 reconnaissance aircraft of an unidentified long range reconnaissance group line this grassy airfield somewhere on the Russian front. These aircraft carry an interesting variation of the East Front I.D., a yellow fuselage band that indicated aircraft operational on the East Front. The national insignia on the fuselage has been superimposed over the yellow bands of the two aircraft closest to the camera, but the third one carries the yellow band in the standard manner behind the national insignia.

A 260 Imp. gal. auxiliary fuel tank was installed in the forward bomb bay of the Ju 88A-1 to extend the range for special bombing missions. To improve the firepower of the defensive armament, additional 7.92mm MG15's were installed in the transparent cockpit canopy sides and were operated by the radio operator.

This Ju 88D-2 reconnaissance bomber bears the shield and reindeer antlers of Fernaufklärung Gruppe 120 (FA Gr 120), a long range reconnaissance group. This airplane is armed with a forward firing MG/FFM 20mm cannon in the nose for commerce raiding.

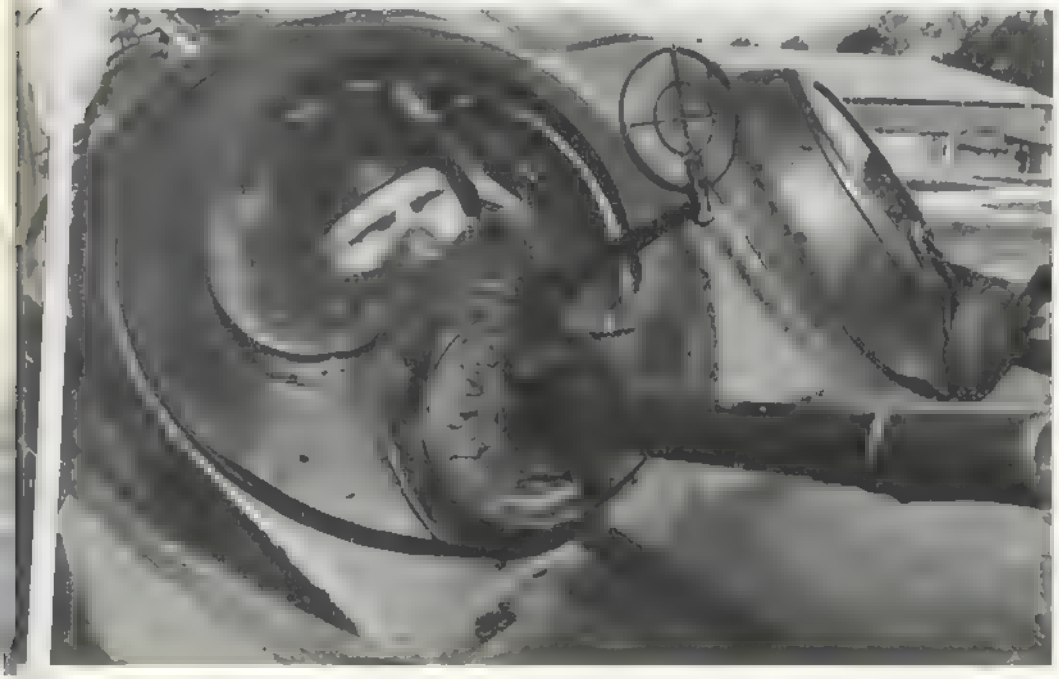


This photograph shows the distinctive lines of the Ju 88A-1's canopy. Except for the single rear-firing machine gun in the gondola under the fuselage, the rest of the Ju 88's defensive armament is shown in this shot — three hand held MG15 machine guns. The diving eagle insignia on the nose identifies this Ju 88 as one of Kampfgeschwader 30's aircraft.

(Below left) Another view of the canopy of a Ju 88A-1. This view shows to advantage the rear gunner's seat and the pair of MG15 machine guns that the gunner had to fire during attacks on the Ju 88 by enemy aircraft.

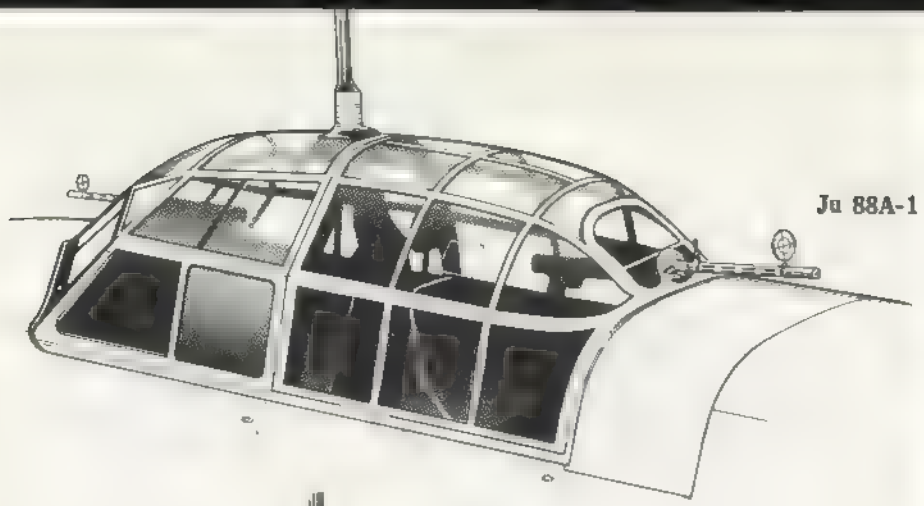
This pair of MG15's constituted half of the defensive armament of the Ju 88D reconnaissance aircraft. The Ju 88D was a Ju 88A bomber converted to the reconnaissance role by the addition of extra fuel cells in the internal bomb bay to extend the aircraft's range and the addition of aerial cameras behind the bomb bay area. The snow capped mountain in the background is Mt. Etna, Sicily's active volcano.

Taken from within the cockpit, this photo shows the rear gunner of the Ju 88A-4 manning one of his two MG81 machine guns. The flexible device at the side of the gun is the belt feed mechanism for the MG81's ammunition supply. A close look will show the 7.92mm bullets in their disintegrating link belt.

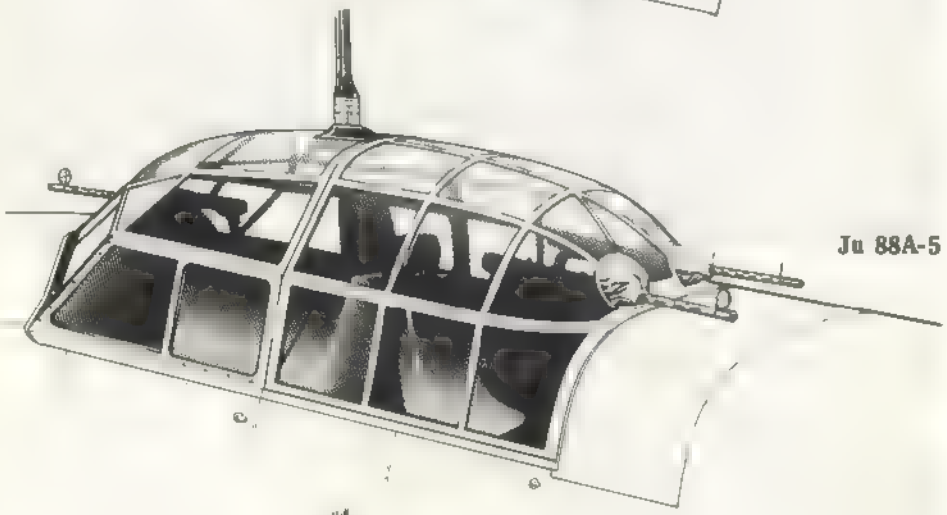


(Above left) The forward firing machine gun of the Ju 88 bomber was usually aimed and fired by the bombardier/navigator, but this Ju 88 features a Revi reflector gun sight mounted above the instrument panel so that the pilot can aim and fire the gun which has been bolted into position.

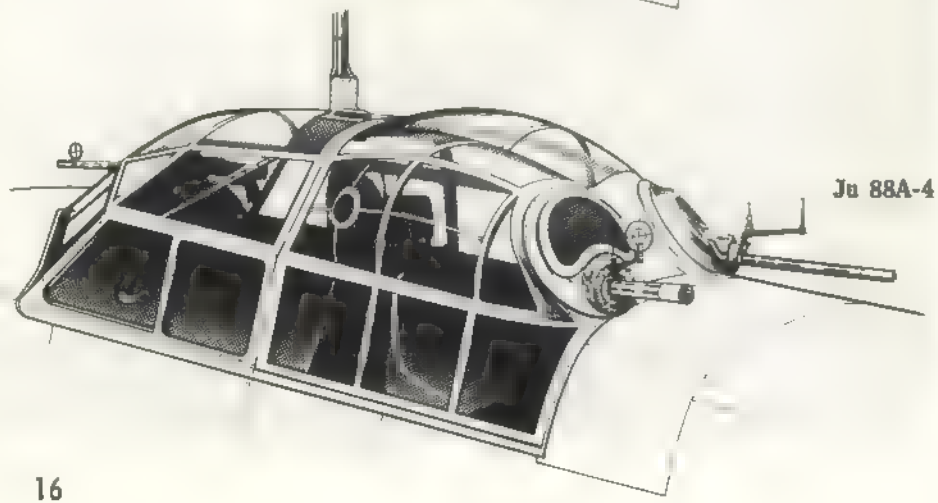
Later variants of the Ju 88A series bombers were armed with MG81 machine guns of the type shown here. The MG81 was of the same caliber as the MG15 (7.92mm) but it was slightly heavier and featured a higher rate of fire than the MG15. The ring and bead sight was moved from the barrel of the gun to a separate fitting in order to enable the gunner to better lead his targets.



Ju 88A-1



Ju 88A-5

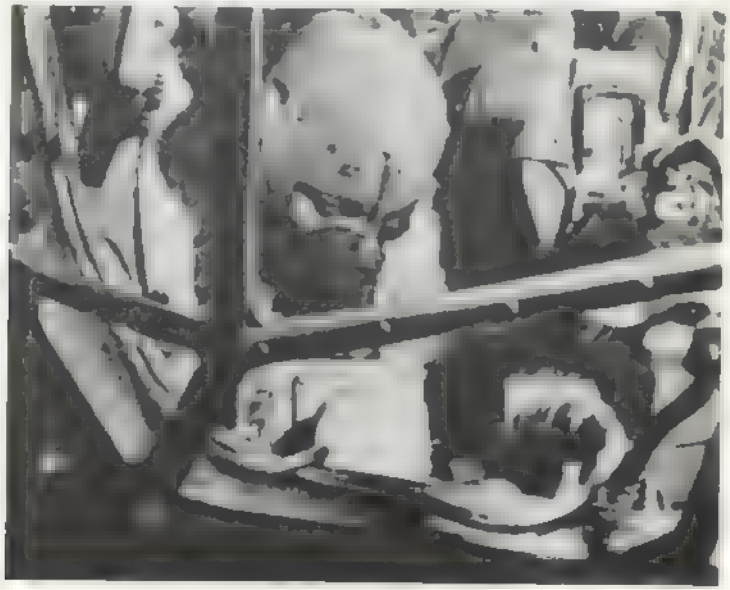


Ju 88A-4

Yet another view of the defensive gunner's position, this one taken from the floor of the cockpit showing the belt feed mechanism for the ammunition of the rear firing machine gun. The large bag attached to the bottom of the gun was used to catch the expended brass casings as they are fired.

The "office" of a Ju 88A. Shown to good advantage is the apparent disarray in the cockpit, the mechanism and ammunition bag of the forward firing MG15 machine gun and the optical panel at the front of the under-fuselage gondola through which the bombsight was used. To the right of the gondola is a window panel that was used by the pilot to spot targets for divebombing.

A Ju 88A-5 of the "Edelweiss-Geschwader", KG51, shows off its gondola. The gondola was armed with a rear-firing MG15 machine gun which is not shown in the photo. The gunner who fired it laid flat on his stomach in the gondola with his feet toward the front of the aircraft.



FA Gr. 120

A view through the optical panel at the front of the gondola, this photo shows the bombardier/navigator sitting at his position using a navigational computer for plotting the flight. The bomb sight has been dismantled and is presently not in view.

(Above left) A close-up view of the Lotfe bomb sight of a Ju 88A bomber. These bomb sights were used mainly when the Ju 88 was performing a horizontal bombing mission. To the right of the bomb sight is the bomb arming and release mechanism that was operated by the bombardier.

The bombardier at his position in front of the Lotfe bomb sight in the nose of a Ju 88 bomber. The pilot of the aircraft can be seen to the bombardier's right; his feet in the rudder stirrups and his hands on the control yoke.

Major Werner Baumbach

Being helped into his flying suit, Major Werner Baumbach prepares for another anti-shipping mission over the icy waters of the North Atlantic. Baumbach, much decorated as a bomber pilot and Geschwader leader, eventually became the Commanding General of Bombers, in which position he ended the war.

Putting on his inflatable life vest is Major Werner Baumbach, winner of the Knight's Cross of the Iron Cross with Crossed Swords. Baumbach was awarded the Crossed Swords for leading a Staffel of Ju 88's against an Allied convoy heading for Russia and sinking a large number of ships.

Luftwaffe ground crewmen swarm over this Ju 88A-4, fueling and arming it with bombs for another mission. Although unconfirmed, it is believed that this is the aircraft flown by Colonel Werner Baumbach. This aircraft has a rudder and vertical stabilizer full of shipping victory markings. It shows a score of sixteen ships hit, thirteen of them sunk, and a grand total of over 40,000 tons of Allied shipping sent to the bottom of the Atlantic Ocean. That's quite a record for any man!

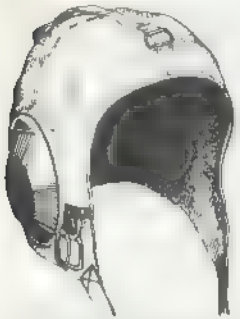
During the four years of operational flying in Ju 88's, Werner Baumbach was responsible for sinking thousands of tons of Allied shipping; formulating flying tactics for the successful sinking of ships in convoy, and the active and aggressive leadership of a Bomb Wing that built a fine record under his command.

Taken from outside the cockpit adjacent to the pilot's seat, this photo shows the pilot and the navigator/bombardier in their seats. Both men are wearing the small smoked-lens goggles worn by aircrew members to ward off the bright rays of the sun that so easily penetrated the clear plexiglass panels of the Ju 88's canopy.

(Below left) The instrument panel of a Ju 88 bomber. Instruments readily identified are the engine tachometers, manifold pressure gauges, radio and magnetic compasses, air speed indicator, turn and bank indicator, altimeter and Revi gun sight controls for the fixed forward firing MG15 machine gun to the pilot's right.

Steel helmets worn by bomber crews? Yes, indeed! These steel helmets were standard issue to all air crew members who flew in Ju 88 bombers in the ground attack or infantry support low level role. Later Ju 88 variants were heavily armored to protect the crew members from enemy small caliber projectiles and light anti-aircraft fire.

The pilot and the navigator are shown here during a flight. This view affords a good look at the gear hung from the top of the canopy, including the radio transmitter controls above the pilot's head, the folded sun shades above the transmitter controls and the mass of cabling descending from the antenna mast at the center of the canopy.



Unlined Flying Helmet

Fleece-Lined Flying Helmet

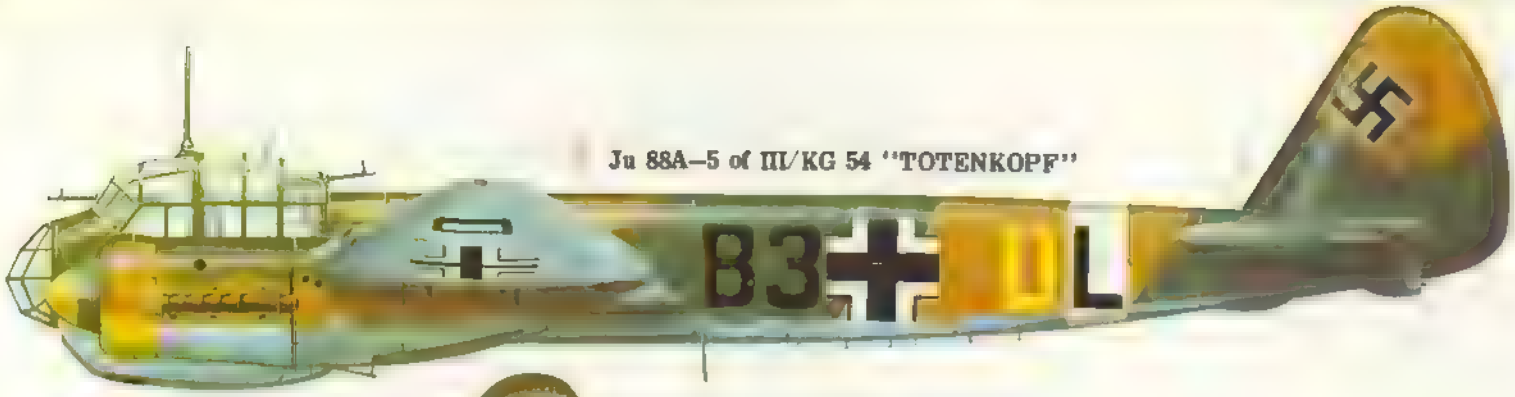
Summer Flying Helmet

Taken from behind the pilot, this photograph shows a Ju 88A-1 in the foreground and a Ju 88A-5 in the background. Both aircraft as well as the camera plane are all of Kampfgeschwader 77. The unit insignia of KG77 is barely visible on the nose of the Ju 88A-1.

As an armorer jacks a heavy bomb into place under the wing of this Ju 88A-5, an NCO mechanic gathers his tools up after having finished a spark plug change on the port engine.

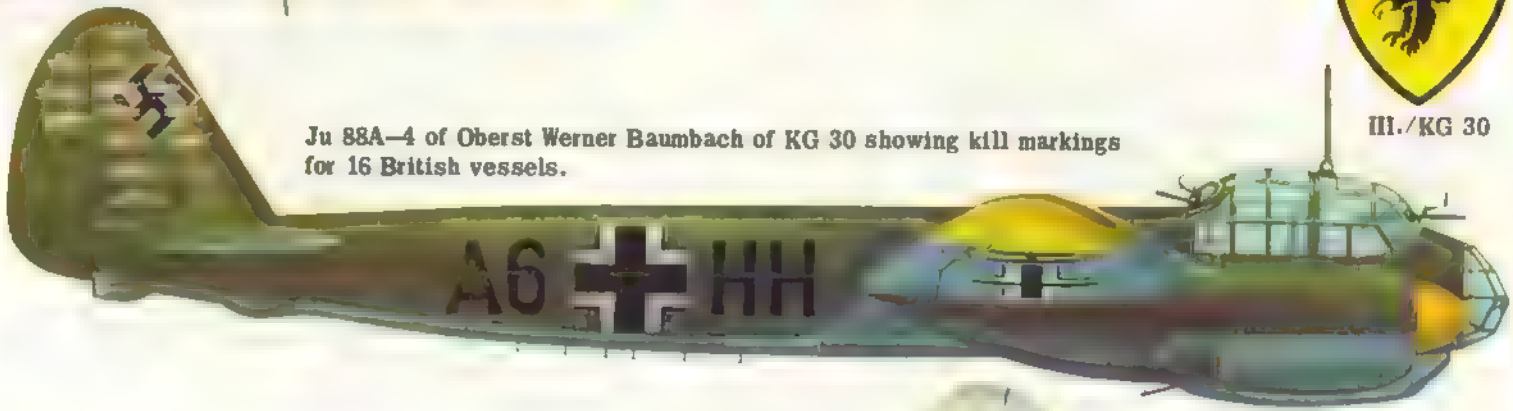
(Above left) Engine mechanics check out the accessories on the port Jumo 211 engine of this Ju 88A-5 bomber. The photo shows the large annular radiator system built onto the in-line Jumo engine, giving the appearance of a radial engine.

This stylized long-necked goose marks a Ju 88D-1 reconnaissance bomber of the first Staffel of Long Distance Reconnaissance Group 121.



Ju 88A–5 of III/KG 54 "TOTENKOPF"

III./KG 30

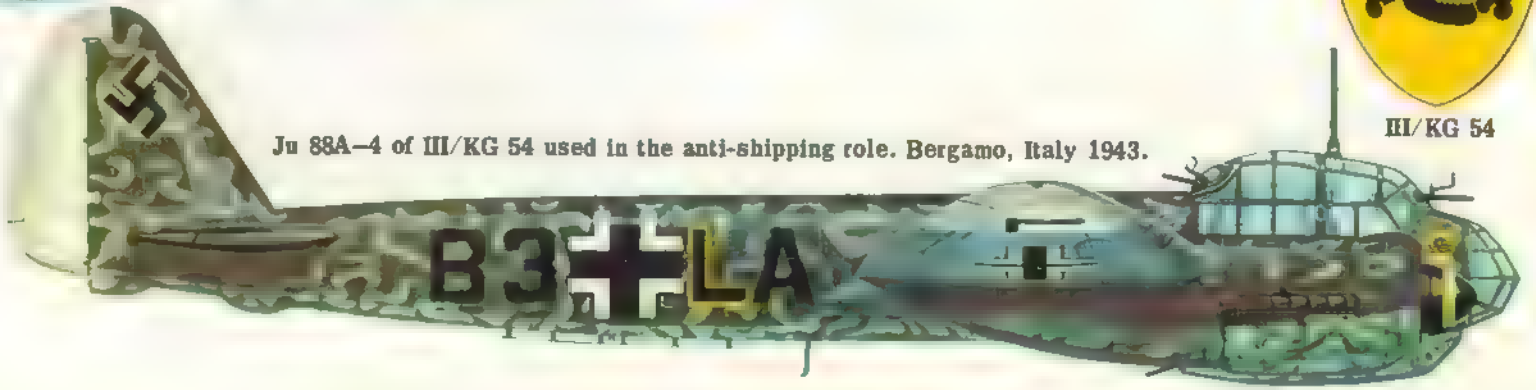


Ju 88A–4 of Oberst Werner Baumbach of KG 30 showing kill markings for 16 British vessels.

I.(F)/122

Ju 88A–D–O Photo Recon Bomber of 1.(F)/122 Ostfront, Winter 1942/1943.
Note: New engines have recently been installed.

III/KG 54



Ju 88A–4 of III/KG 54 used in the anti-shipping role. Bergamo, Italy 1943.

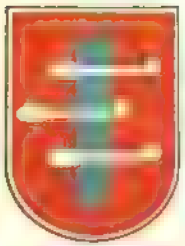
10./KG 1

Ju 88A–4 of 10./KG 1, Russia 1944

Ju 88A/6U Equipped with FuG 200 Radar used by an anti-shipping unit in southern Italy.

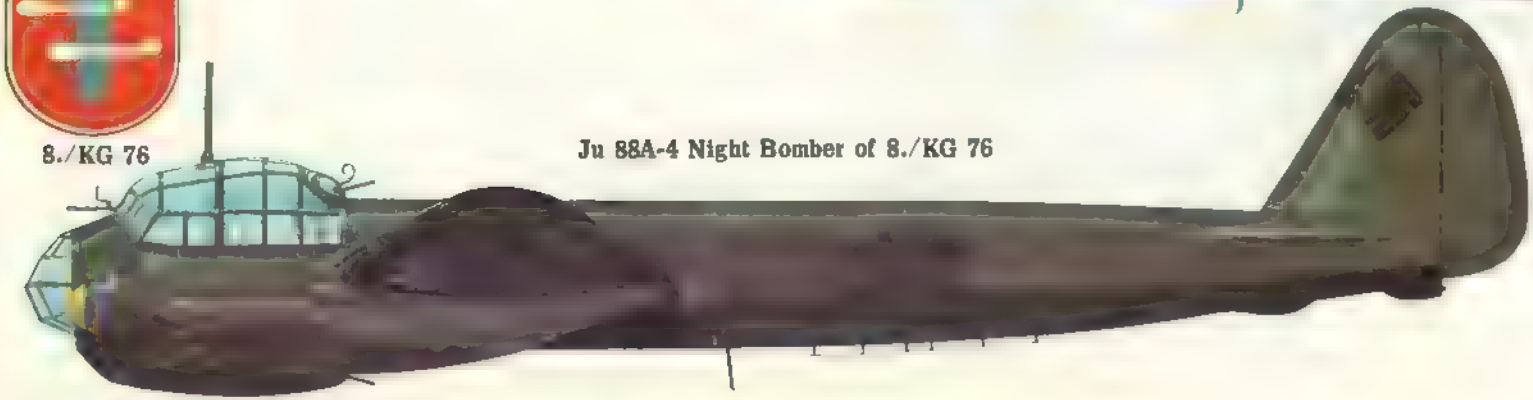
I./LG 1

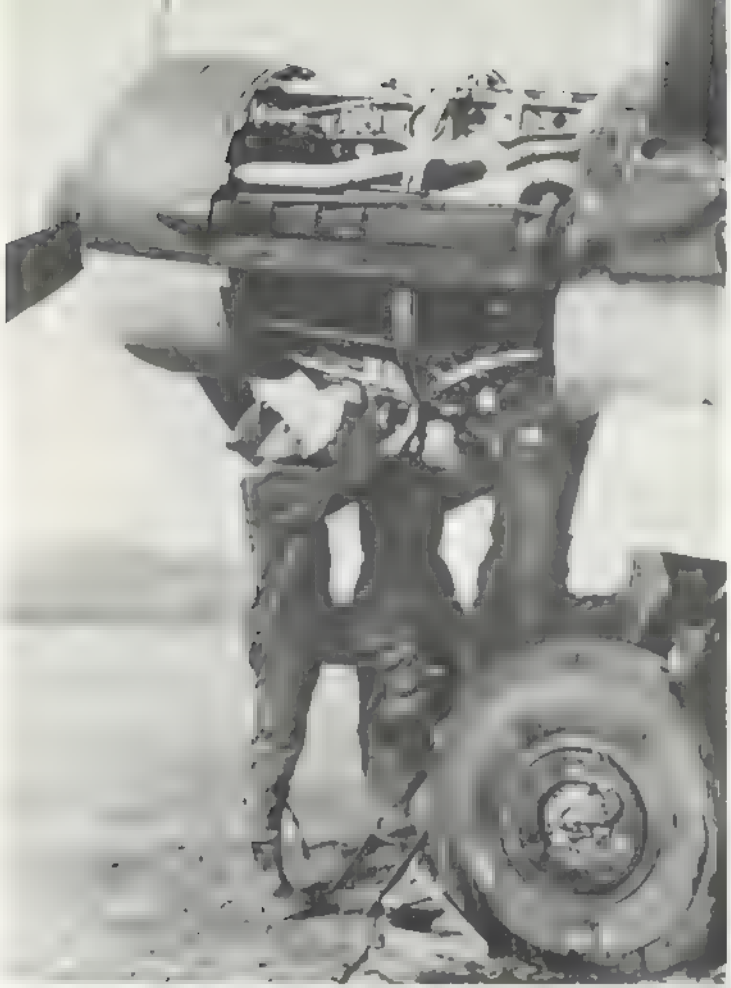
Ju 88A-10 of LEHRGESCHWADER 1, North Africa



8./KG 76

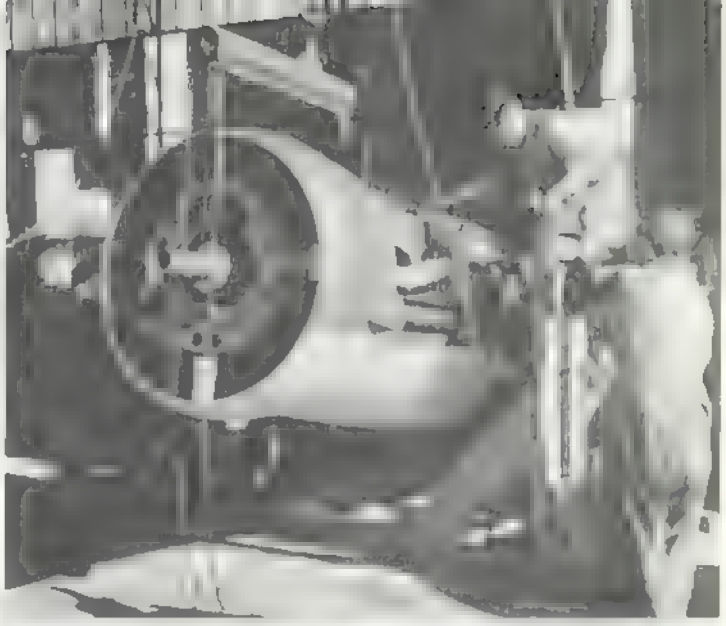
Ju 88A-4 Night Bomber of 8./KG 76





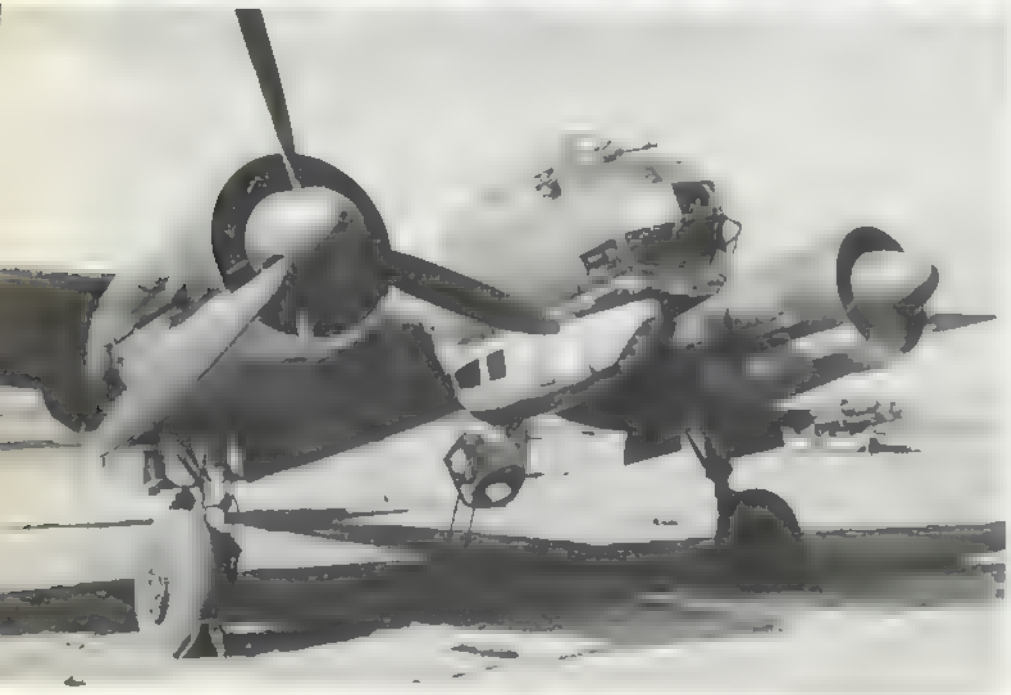
At a forward airfield in Italy this Mediterranean based Ju 88 bomber receives some engine service from the ground crew. Two crewmen work on the Jumo 211's oil cooler while a third one; his head, arms and upper torso wedged between the rear of the engine and firewall, works on the oil pump assembly.

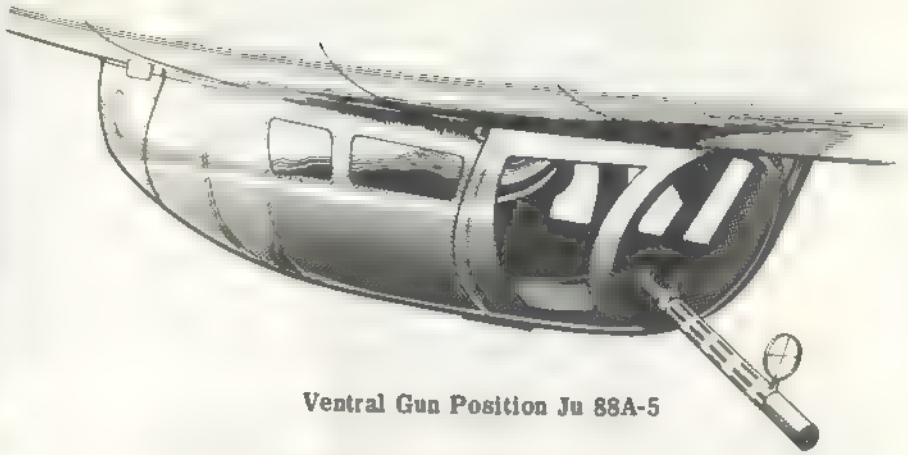
II./KG 54
(Totenkopf Geschwader)



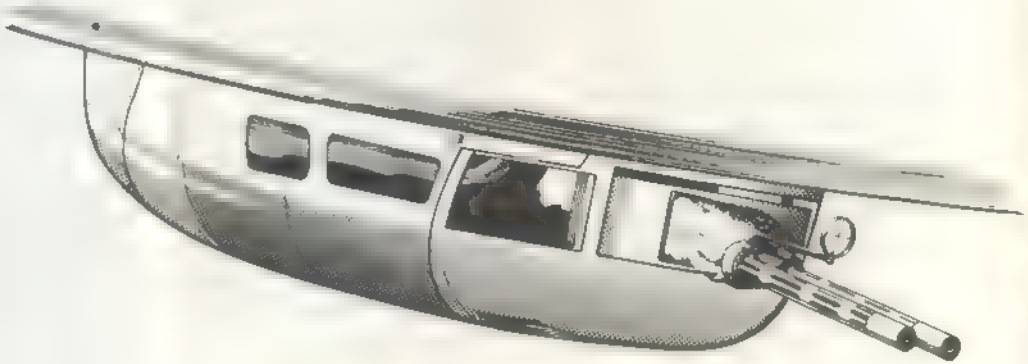
(Above right) A brand new Jumo 211G engine complete with cowl and nacelle comes off the ground for replacement on an ailing Ju 88A-5. The Jumo 211 series engines produced between 1200 and 1450 takeoff horsepower, depending upon the particular variant of the engine.

Luftwaffe mechanics raise the engine to a comfortable height in order to work on its oil cooler inlets and oil lines before installing it in the nacelle of the Ju 88. Another Jumo 211 engine sits on the concrete hanger floor in the background.





Ventral Gun Position Ju 88A-5



Ventral Gun Position Ju 88A-4

(Above Left) Suiting up for a mission, crew members of an aircraft belonging to KG 51 enter this Ju 88A-5 through the ventral machine gun position by means of a hideaway folding ladder.

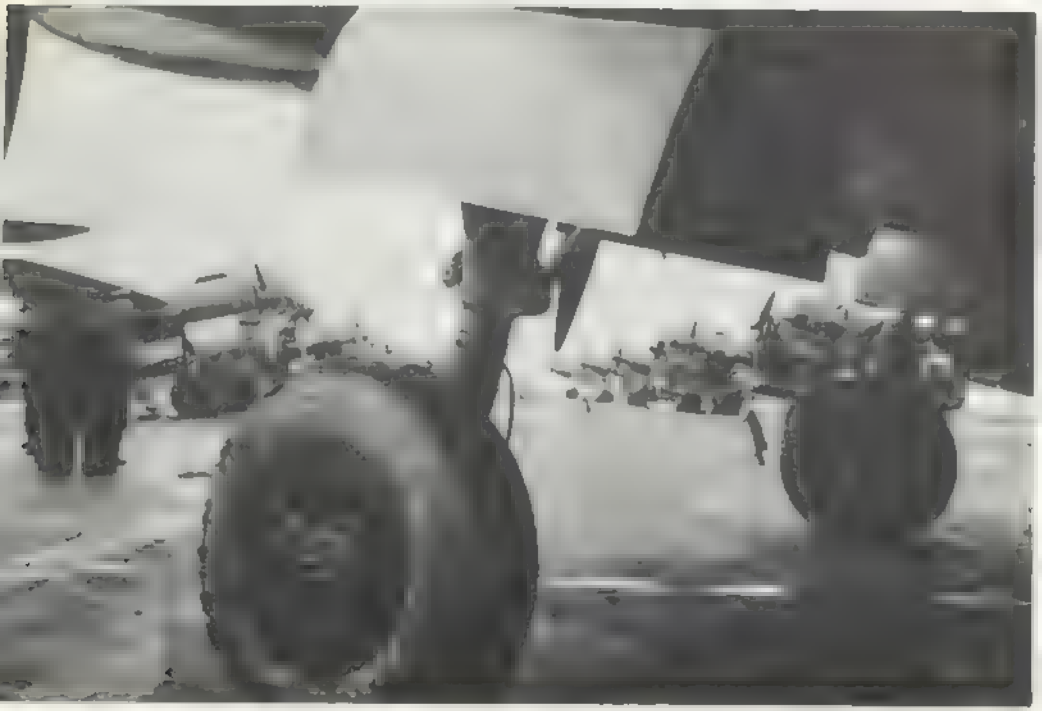
One of the main external differences between the Ju 88A-5 and Ju 88A-4 is found in the ventral machine gun position. The A-5 ventral position carried a single MG15 mounted to a circular plexiglass windscreen as can be seen at the right while the A-4 mounted a pair of MG81's through a more rectangular window as can be seen in the photo on page 29 upper left.

A Ju 88A-4 bomber bearing washed out insignia and the white fuselage band of Mediterranean aircraft sits on a rocky Italian airfield as two ground crewmen take advantage of the shadows formed by the wings and fuselage. The ground crew member on the left is sitting on the folded-up boarding ladder for the gondola hatch.

RHEINMETALL MG 15 Cal 7.92MM

(Below left) The under-belly gondola of a Ju 88A-1. The rear hatch to the gondola is sealed and jutting from the armament socket is an MG15 hand-held machine gun, one of the four that made up the bomber's defenses.

This interesting shot shows the open gondola hatch with its crew entry ladder in place for boarding. Barely visible is the barrel and ring sight of the MG15 machine gun to the left of the swing-down hatch cover. This Ju 88A has been fitted with a pair of 500Kg bombs on her inboard external bomb racks.



A rough landing, small arms fire, or shrapnel probably caused the flat tire on this Ju 88, but whatever the cause, a good pilot and much luck enabled the airplane to land without further damage. Two Luftwaffe mechanics now prepare for the unenviable job of changing the flattened tire.

(Above left) Pulling maintenance on weapons and machinery was a thankless and never ending job. The Luftwaffe, as in the other branches of the German Armed Forces, brought preventive maintenance nearly to an art matched only by the American soldier with his love of machinery.

Ju 88A-4 bombers on the test stands at the Junkers factory await the technicians that will run the birds through their paces before being turned over to the Luftwaffe. Technicians have already started to gather in the left foreground of the early morning scene.

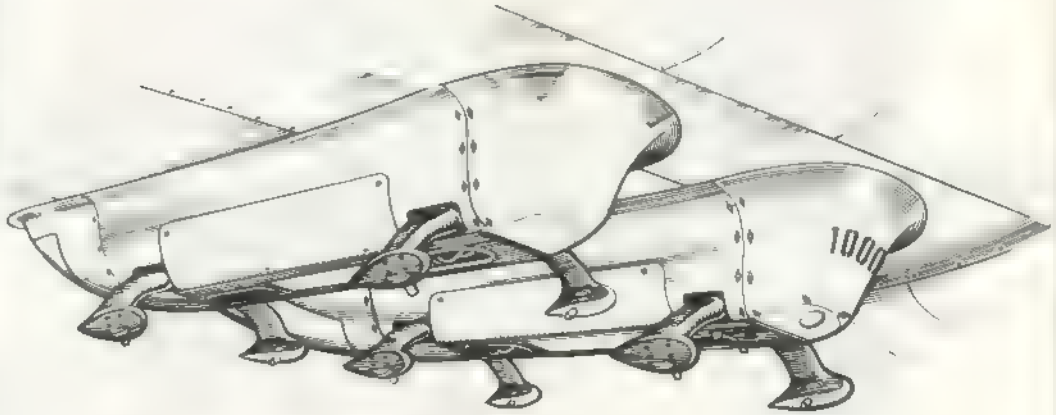
This Ju 88A-4 bears the white skull and crossbones insignia of the Death's Head Wing, KG54. The four crew members in the foreground wear the tan tropical uniforms of Luftwaffe personnel stationed in the Mediterranean and southern Russian fronts. These uniforms were worn most commonly by troops of the parachute corps, although they were also worn by flight personnel as the photograph plainly shows.

(Above left) This gaudily-camouflaged Ju 88A-11 bomber provides its tropically clad ground crew with some shade in the hot afternoon sun at this Sicilian airfield. The gondola is armed with a twin-barrelled MG81Z Zwilling (twin) machine gun and a close look will show that the outermost of the two external bomb racks underneath the wing has been removed from the aircraft.

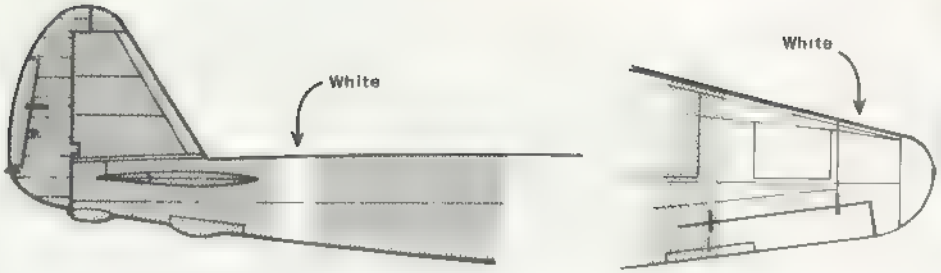
A celebration awaits the crew of this Ju 88D-2 reconnaissance bomber of FA Gr 120 on the occasion of the 1000th operational sortie made over enemy territory by aircraft of the group. The grey spray pattern over the standard green uppersurfaces is an indication that aircraft of the group probably operates over water.

This is a unique photo in that it shows several ground crew members engaged in calibrating the cockpit instrumentation of this Ju 88A bomber. The hydraulic jack is being used to level the aircraft so that the magnetic compass, turn and bank indicator and other instruments can be properly adjusted. A close look will reveal a line and surveyor's plumb bob attached to the nose to the right of the gondola, providing a visual aid for the ground crew.

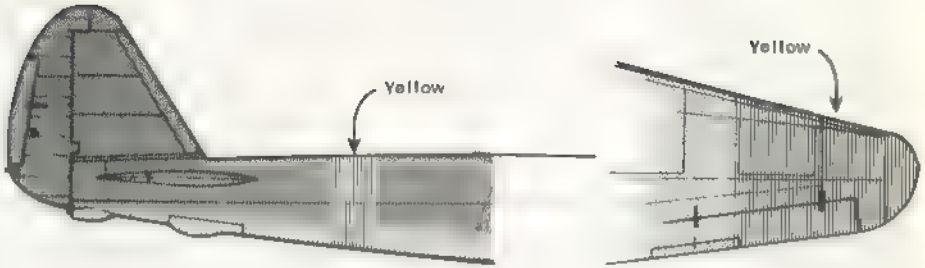
(Above right) F1+CM, a yellow banded Ju 88A-4 of Kampfgeschwader 76 provides an interesting resting place for this black-suited member of the aircraft's ground crew. Note the criss-crossed MG15 machine guns protruding from the rear of the canopy and the SC500 bomb slung under the aircraft's wing between the engine and the fuselage.



Bomb Rack Detail



ID Bands - Mediterranean



ID Bands - Eastern Front

A Ju 88A being refueled on a hot day in a forest clearing on the East Front. The aircraft is one belonging to KG76. Note the fuel octane triangle painted on the fuel cap that is laying loose next to the opening through which the fuel hose runs.

Crew members swarm around the tailwheel and rear fuselage section of this Ju 88A bomber checking for damage as a result of a dangerous mission over the Mediterranean Sea The mountain in the background is Sicily's Mt. Etna.

This Ju 88A-4 bears the rather detailed unit markings of the III Gruppe of Kampfgeschwader 77. The various Gruppen differed in their markings only by the color around the edges of the shield; the III Gruppe using yellow as its identifying color.

(Below right) A very clear and extremely rare view of a Ju 88A-1 bomber of the Hungarian Air Force being refueled on the East Front by Luftwaffe ground personnel. Hungarian national insignia consisted of red, white and green markings on the wingtips and tailsurfaces, accompanied by the white cross in a black square on the sides of the fuselage.

One of the Rumanian Ju 88A-5's warming up her engine prior to a mission against the advancing Red Army during early spring of 1944. The Rumanian Air Force would shortly turn against Germany and use these same Ju 88's against their former allies.

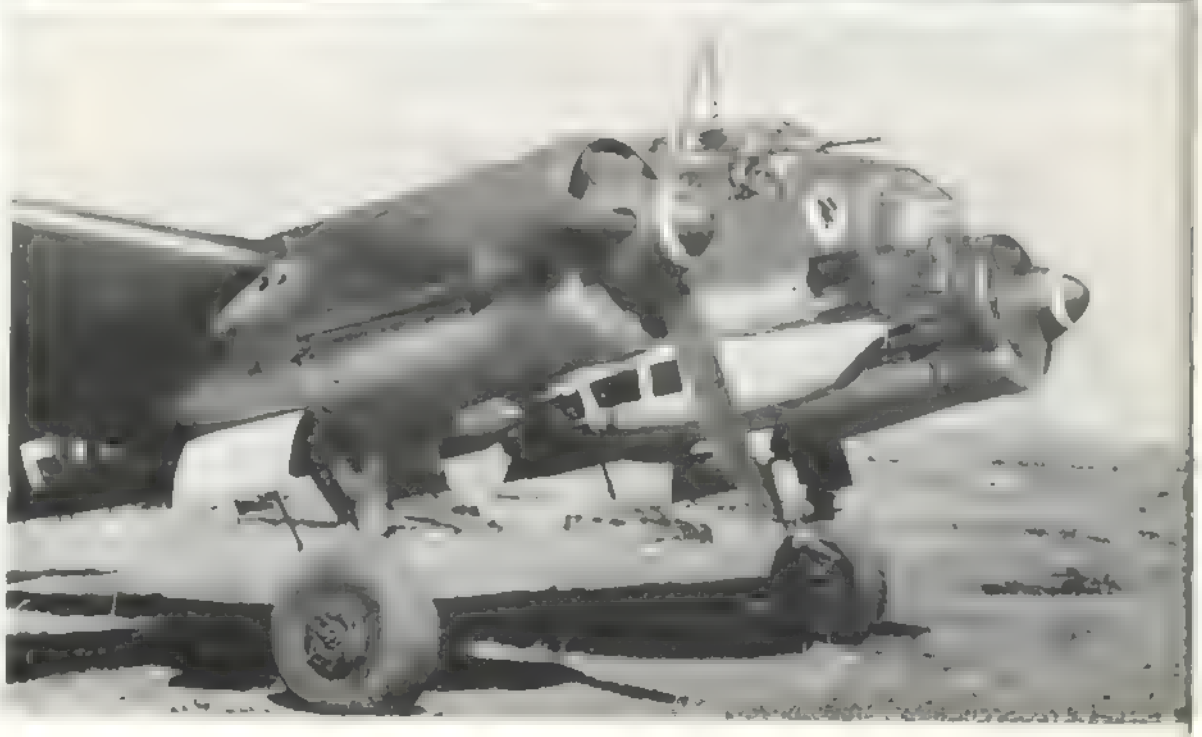
A member of the ground crew looks out of the pilot's window of this Ju 88A bomber of the 4th Staffel of KG1 "Hindenburg". This unit's insignia was a large cow perched on a bomb with lightning bolts shooting from the cow's mouth.

(Above left) This Ju 88A-1 of KG30 carries an additional insignia on the outer sides of its engine cowlings. This insignia identified the aircraft as being in the complement of the First Staffel (1./KG30). It was made up of an umbrella over which was superimposed a German gun sight pattern.

A final view of the unit insignia of Long Range Reconnaissance Group 120 on this Ju 88D-2 This unit insignia featured a grey shield outlined and crossed in red, with a pair of reindeer antlers superimposed in black with a white outline.

Yet another variation of the First Staffel, KG30's unit insignia is shown on the fuselage of this Ju 88. Often this insignia was carried on the engine cowlings, the nose being used for the Geschwader's diving eagle insignia, but this aircraft carries only the Staffel insignia. Note the shrapnel damage from an exploding anti-aircraft shell picked up over England.

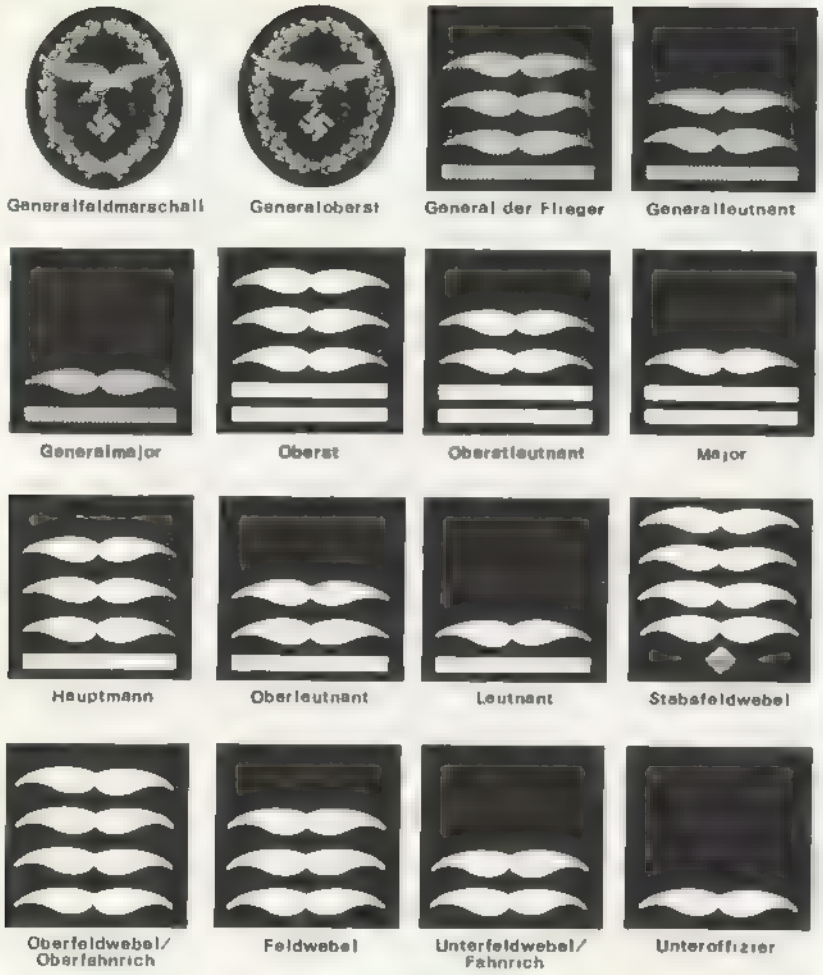
(Above right) Another variation of KG30's diving eagle insignia; this one painted on the nose of a Ju 88A-1 bomber during the Battle of Britain in September of 1940.



The staff and command aircraft of Kampfgeschwader 30 carried a variation of the diving eagle insignia. The shield was divided into three diagonal sections; the top section red, the center section on which the eagle was painted was white, and the bottom section was yellow. This Ju 88A-5 carries the staff insignia, plus the thin white bands around the spinners, an additional identifier for staff aircraft.

An as yet unidentified unit insignia on a Ju 88A-5 that has been fitted with a forward firing MG81 machine gun, that features a sun shield over its ring and bead sight mechanism above the barrel of the gun.

A Junkers Ju 88A-1 of 8. Kampfgeschwader 76 with black camouflage painted over the light blue undersurface. Four 220 lb. (100 kg.) bombs are fitted externally on ETC racks. Note the MG15 in the canopy roof.



Flying Suit Rank Insignia
(General insignia in gold)

(Above right) A leopard cub, the mascot of the Staffel, peers out of the open side window of this Ju 88A-4 bomber of the 4th Staffel of Bombing Wing 76. The Staffel insignia was a goose with a British tin hat, cigar and umbrella in the process of performing an undignified act as the image of a gun sight is superimposed over him.

This Luftwaffe blue Opel Olympia convertible, possibly the squadron commanders vehicle, holds the mascot of the squadron and the commander's dachshund. The vehicle is marked with the goose insignia of 4./KG76, a practice that was common in Luftwaffe units.

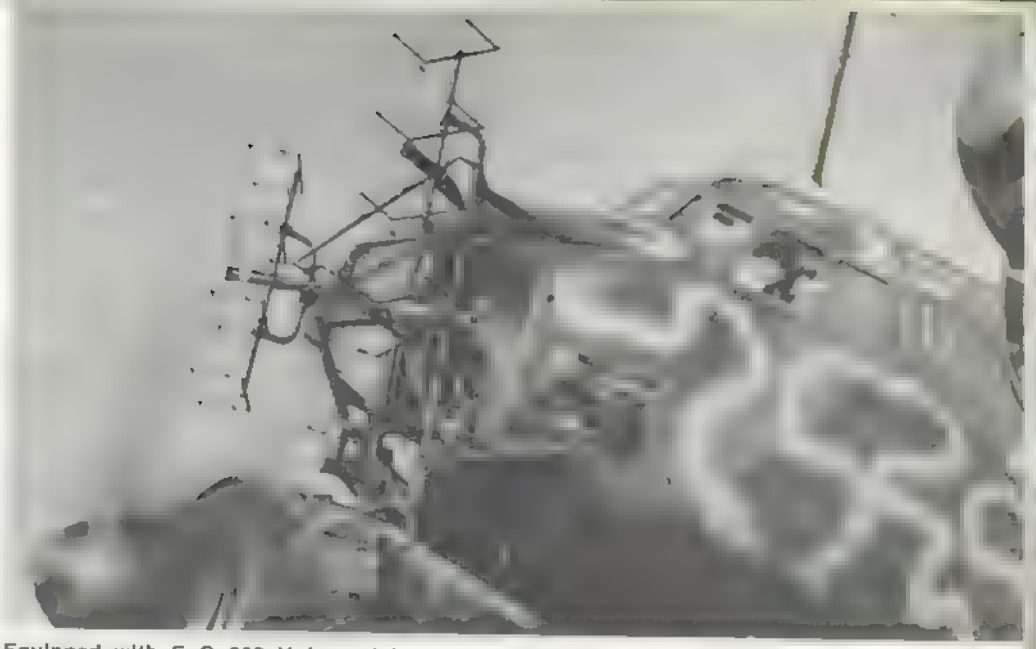
An award banquet awaits the crew of this Ju 88A-5 bomber which has completed the 5000th operational sortie over enemy territory for the III Gruppe of Training Wing 1.

(Above left) A closer view of the large Edelweiss flower that made up the unit insignia of the aircraft of Bombing Wing 51, called by its members the "Edelweiss-Geschwader". This particular aircraft is a Ju 88A-5 bomber.

Although unconfirmed, this unit insignia of a highly stylized diving eagle is said to be yet another variation of the insignia of KG30. This red, black and white motif has been seen on other Ju 88's as well.

The Edelweiss flower on the blue shield of this Ju 88A-5 marks it as a member of Kampfgeschwader 51, Bombing Wing 51. This unit operated both Ju 88 bombers and Heinkel He111P bombers.

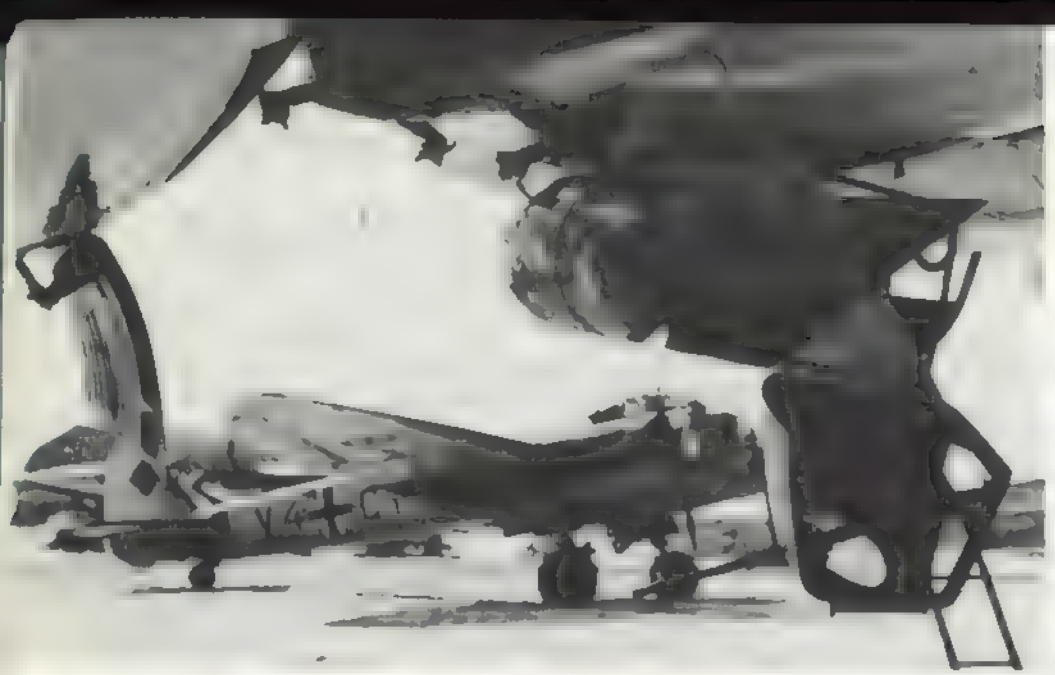
Ju 88's are bombed up at this makeshift bomb dump at the edge of an airfield in Italy. SC1000 and SC500 bombs are visible in the foreground. Note the sandbagged revetment protecting the aircraft behind the line of bombs.



Equipped with FuG 200 Hohentwiel search radar, the Ju 88A-6/U carried a crew complement of three with the ventral gondola removed. Specializing in the anti-shipping role, the search radar allowed the bomber to pick up shipping targets at a great range, long before they could be sighted visually by shipboard lookouts.

The wave mirror camouflage pattern has been put on the aircraft for operations over the Mediterranean Sea, but the unit's insignia, the silhouette of a man on a shield, is of this time still unidentified.

To provide greater range, drop tanks could be mounted inboard of the Jumo 211J engines. The Ju 88A-6/U was particularly active against shipping in the Mediterranean.



This snow covered Soviet airfield is occupied by Ju 88A-4's of KG1. In the foreground is a Ju 88 that has been fitted with an SC250 general purpose high explosive bomb. The Ju 88 in the background has not yet been bombed up.

(Above right) This Ju 88A-4 has been fitted with an external fuel tank for a long-range flight. This modification was also common on aircraft of the Ju 88D series which were used for reconnaissance duties. The Ju 88A-4 in the photo here is presently unarmed, as the absence of a machine gun in the canopy shows.

This Luftwaffe armorer is in the process of adjusting the retaining mechanism of the ETC bomb racks under the wing of the Ju 88. Either of the racks under the wing could be removed from the aircraft when the occasion or mission demanded.

Armorers use a hydraulic jack to jockey an SC500 general purpose bomb into place under the wing of this Ju 88. This machine has received a coating of black camouflage paint over its light blue undersurfaces; indicating that the aircraft is in use as a night bomber, possibly flying over targets in the British Isles.

Kampfgeschwader ID Codes

At the end of 1938 new identification symbols were assigned to the Kampfgeschwader so that the Geschwader, Gruppe and Staffel could easily be recognized in bomber formations. Made up of a letter number combination in front of the Balkenkreuz on the fuselage and two letters behind it, these assignments remained in effect throughout the course of the war. The combination letter and number in front of the cross denoted the Geschwader:

A1 + KG 53 "Legion Condor"	**1H** + KG 26
A3 + KG 200	**1T** + KG 28
B3 + KG 54 (from mid-March 1940)	**2F** + KG 54 (until mid-March 1940)
F1 + KG 76 and I./St.G. 76	**3Z** + KG 153, later KG 77
F8 + KG 40	**4D** + KG 30
G1 + KG 55	**5J** + KG 4 "General Wever"
L1 + LG 1	**5K** + KG 3
L2 + LG 2	**5T** + KSG 1 (Kampfschul-geschwader) (from 1 February 1943 KG 101)
U5 + KG 2	
V4 + KG 1 "Hindenburg"	
Z6 + KG 66	**6N** + KG 100 (formerly K.Gr. 100)
1G + KG 27 "Boelcke"	**9K** + KG 51

The first letter behind the Balkenkreuz, usually either in the staffel color or a black letter outlined in the staffel color indicated the aircraft within the staffel. Oftentimes the staffel color also appeared on the spinners

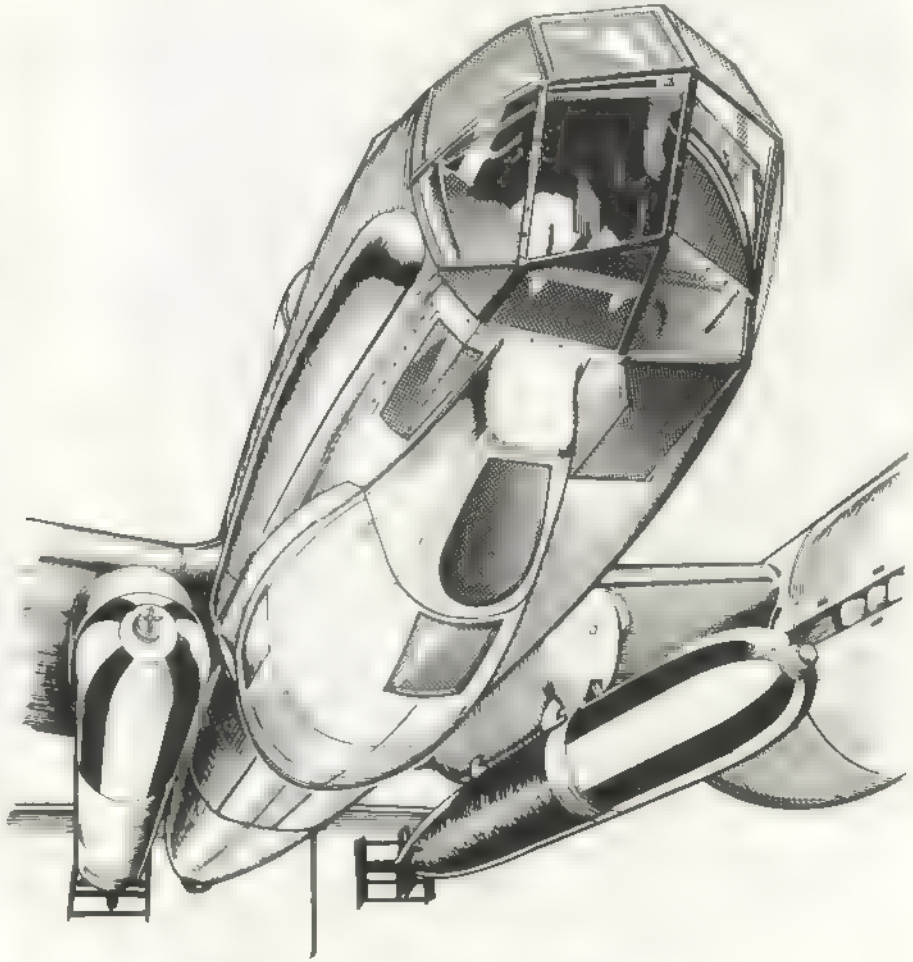
The last letter indicated the staffel within the Geschwader. To avoid confusion the letters G, I, J, O, Q were not used. The following letters were used for individual staffeln:

A = Geschwader - Stab*	Gruppe I (White)	**S** = Staffel 8. (Red)
B = Gruppen - Stab I.*	**H** = Staffel 1. (White)	**T** = Staffel 9. (Yellow)
C = Gruppen - Stab II.*	**K** = Staffel 2. (Red)	Gruppe IV (Blue)
D = Gruppen - Stab III.*	**L** = Staffel 3. (Yellow)	**U** = Staffel 10. (White)
E = Gruppen - Stab IV.*	Gruppe II (Red)	**V** = Staffel 11. (Red)
F = Gruppen - Stab V.*	**M** = Staffel 4. (White)	**W** = Staffel 12. (Yellow)
* (Green letter in front)	**N** = Staffel 5. (Red)	Gruppe V
	P = Staffel 6. (Yellow)	**X** = Staffel 13. (White)
	Gruppe III (Yellow)	**Y** = Staffel 14. (Red)
	R = Staffel 7. (White)	**Z** = Staffel 15. (Yellow)

After 1943 many of the Geschwader codes were painted very small in front of the Balkenkreuz on the fuselage or omitted entirely.

A Ju 88A-17 torpedo bomber taxis out to the runway for a practice mission fitted with a pair of LTF5b aerial torpedos under its wings. The LTF5b torpedoes weighed over 1600 lbs. when equipped with a fully loaded warhead and were extremely accurate when delivered at the proper ranges.

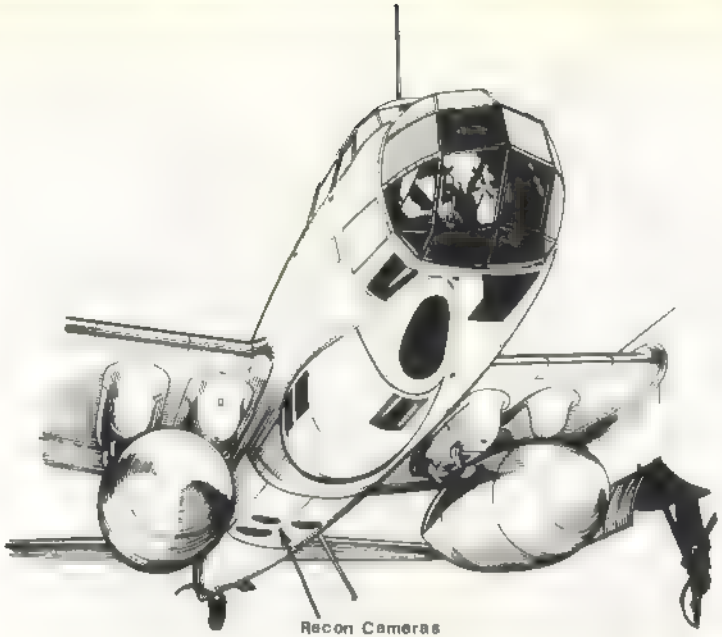
(Below left) This rare photo shows a group of Luftwaffe armorers using a small crane to lower an LTF5b aerial torpedo onto the hydraulic jack so that it may be attached to the Ju 88A-17 torpedo bomber in the background. The orange and white striped warhead on the torpedo indicates that it is a practice torpedo.



Ju 88A-17 Loaded With Two LTF5b Torpedoes

This Ju 88A features a mixed bomb load of two SC500 bombs on its inboard bomb racks, and a pair of SC250 bombs on its outboard racks. The interesting marking on the prop spinner of the Jumo engine is believed to be a visual aid used in tuning the engines. Once the propeller was turning at a certain rate of speed, the marking would appear to be standing still to the naked eye.

A French built tracked prime mover is used to tow this SC1800 bomb under the wing of this Ju 88A-5 bomber of one of the operational Staffeln of Lehrgeschwader 1 (Training Wing 1). The designation of the prime mover was Tracteur d'Infantrie UE. Many of them were captured when the Germans overran France and were put to use by all branches of the German armed forces.



Ju 88D Drop Tanks

An SC1000 on its sled awaits the time it will be slung on to the Ju 88 in the background while a refueling crew goes about the business of topping off the bomber's fuel tanks.

(Below left) This Ju 88 bomber, fitted with four SC250 bombs has been given an overall light grey green paint scheme and has had the white portions of its codes and national insignia painted over the flat black. Aircraft with this special camouflage operated during the dawn and dusk hours when visibility was poor.

With its big paddle bladed props throwing out a spray of morning rain, this Ju 88D reconnaissance plane lumbers down the wet runway on its way to a long mission. This aircraft has been fitted with a forward firing MG/FFM 20mm cannon in its glassed-in nose. Note the absence of dive brakes on the outer panels of the wings.

When the weather on the Eastern Front was fit for flying, the Luftwaffe put as many aircraft into the air as supplies would permit. This ground crew member grabs a cat nap against a pair of SC1000 bombs after having helped in the loading of the aircraft of KG1 earlier in the day.

SC500 bomb being wheeled toward a night raiding Ju 88 (note the black undersurfaces on the aircraft). This shot also provides a good view of the hydraulic jack that is holding the SC500 bomb.

(Left) Engines roaring and main gear doors still open, this Ju 88 is caught by the camera on takeoff. Barely visible under the fuselage is a pair of SC500 bombs and a pair of SC250 bombs slung on to the ETC bomb racks.

(Right) Thanks to some pretty good construction, this Ju 88D-2 was capable of making it back to its own air base in the African desert even though it lost a propeller as a result of enemy fighter attacks. Here, Luftwaffe crew members survey the airplane for damage.

(Far right) Here's one they walked away from. Receiving anti-aircraft fire over the target, the pilot nursed the Ju 88 home, jettisoned his canopy for an emergency exit, then decided to set her down. A hydraulic failure caused the landing gear to collapse and the aircraft was set down on one wheel. That the crew walked away is a sign of good piloting and lots of luck.

(Above) A trio of splinter green camouflaged Ju 88D reconnaissance bombers bearing the yellow East Front bands heads out for a long range mission. These aircraft had extra fuel cells fitted in the space occupied by the bomber version's internal bomb bay and carried aerial cameras behind the fuel cells in the fuselage.

(Right) A close-up view of a crash-landed Ju 88A bomber, showing to good advantage the cockpit interior and the placement of the pilot's and rear gunner's seats. The pilot's seat has been armored with 11mm armor plating, but the rear gunner's seat and surroundings offer virtually no protection for the man.

(Far right) This Ju 88A-5 suffered a collapsed landing gear upon landing and battered itself down the grassy runway. Recovery procedures are now underway as the large flotation bag underneath the wing indicates. The slightly bent propeller tips indicate that the props were only windmilling when the plane touched down.

(Left) The camera catches this sand pink and green camouflaged Ju 88A-10 bomber over the Mediterranean Sea on a patrol mission. This aircraft was one belonging to Lehrgeschwader 1. The A-10 variant was a tropicalized version of the A-5 bomber.

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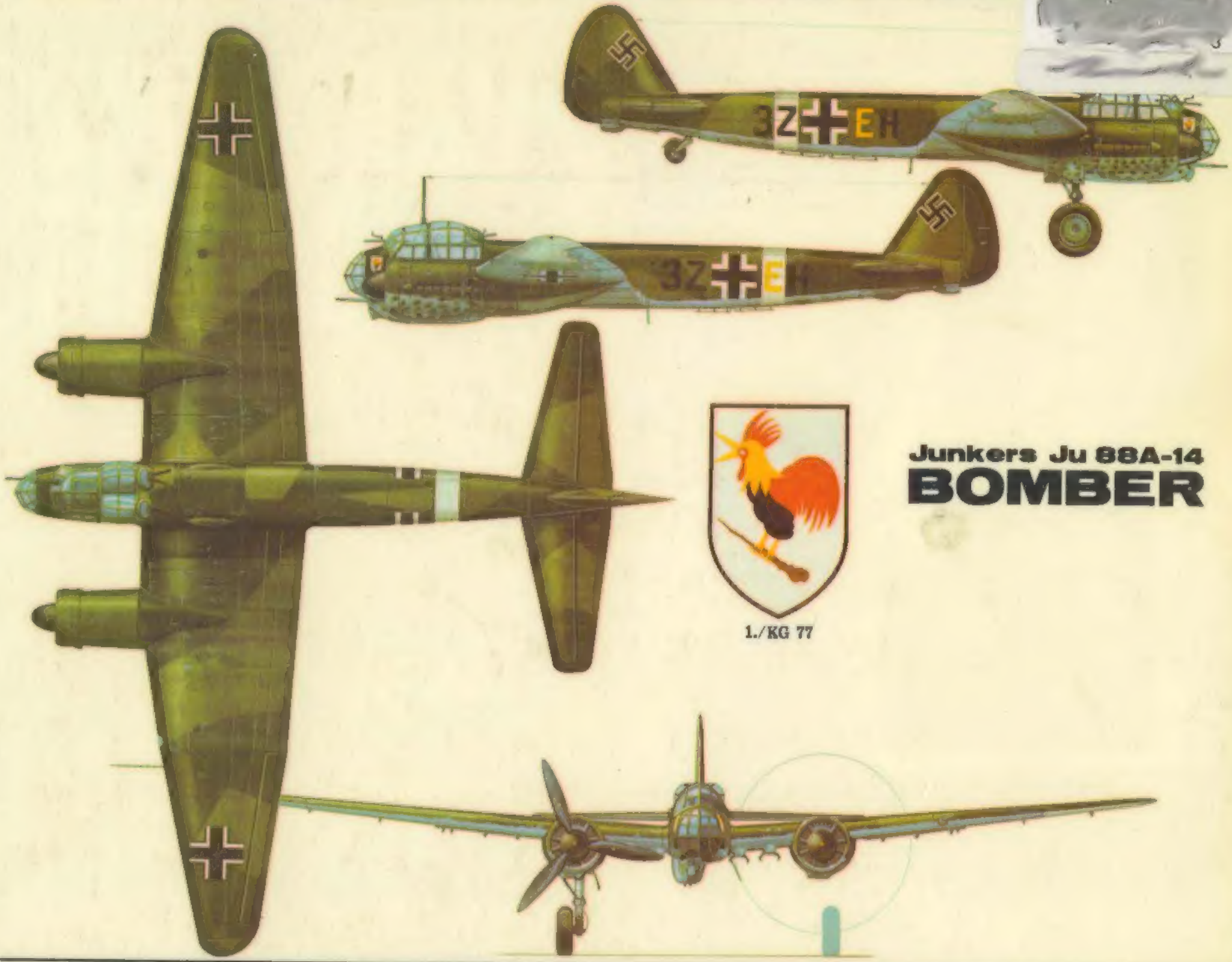

1./KG 77

Junkers Ju 88A-14
BOMBER